# Region 1 FY 2015 Invasive Species Control Program Proposal

**Refuge/complex name:** Hakalau Forest National Wildlife Refuge.

**Project title:** Control of English Holly.

**Total amount requested:** $37,310

**Project description:** English holly (*Ilex aquafolia*) was identified as a highest priority target invasive plant species in the Hakalau Forest National Wildlife Refuge (Hakalau) 2010 Comprehensive Conservation Plan (CCP). It is a tall shrub or small tree that can spread via seeds or vegetatively and can out-compete native species. Holly was originally planted around ranch buildings located in this area prior to establishment of the refuge. Hakalau area is one of few places where English holly is found in Hawaii, so eradication here is crucial not only for the refuge, but for other native ecosystems in the state. Through recent efforts (2012-14) we are getting an upper hand on control of holly. We propose to conclude these efforts by eradicating it from remaining areas. Funding would allow contractors to treat the last remaining dense stands of holly on the refuge, the primary seed source contributing to dispersal of this plant.

**Distinct project with well-defined objectives (10 points):** In FY12-14, we conducted control of English holly with volunteers, contractors and refuge staff supported by USFWS Invasive Species Management with Volunteers (IDMV) and Invasive Species Control Program (ISCP) grants; U.S. Forest Service Forest Health Protection (FHP) funds and Refuge funds. Through these efforts we have treated English holly in core concentration areas in the Pua Akala Management Unit. The objective of this proposal is to complete eradication on the refuge by removing the last few remain stands of dense holly. This will be achieved by hiring experienced contractors to treat these stands. In 2014 while monitoring previously treated areas, we found that foliar treatment was not being effective, so methods were modified to 100% removal of all plants. Younger seedlings were pulled out. Larger plants, tree form or too large to pull out by roots, were cut and stumps were treated with Garlon 4. If possible roots were dug up and treated as well. This intensive treatment increases the amount of labor required, but significantly increases the effectiveness of eradication efforts. We then will move to a maintenance mode, removing dispersed, smaller young plants as they are encountered while doing other weed control work. It will be important to remove these plants before they reach fruit bearing stage.

**Potential for maximum control/Likelihood of success (10 points):** We estimated the area of highest holly concentration to be approximately 500 acres in the SW portion of the refuge. Previous efforts have eliminated much of the holly from this area. However, several stands remain to be treated. We seek funding to complete eradication efforts conducted thus far. We have requested FHP funds for FY15, primarily for Florida blackberry control but efforts would include holly control when conditions are not favorable for spraying blackberry. With ISCP funds we will add hours to the FHP funded contract to expand holly control efforts. In FY14 we modified controls methods to be more effective: 100% removal of all plants and treating stumps with herbicide. Follow-up evaluation has shown these methods to be highly successful, so they will be utilized on future control efforts.

**Comment [BF1]:** So much awesome IPM in here!

**Comment [BF2]:** Monitoring and adaptive management, right here.

**Biological benefit to priority species or BIDEH (10 points):** Hakalau Forest NWR established to conserve endangered forest birds and their habitats. Since establishment of the refuge there has been significant progress in forest restoration leading to increasing populations of native forest birds. However, these gains are threatened by invasion of exotic plants, animals and disease. The refuge supports a diversity of native plants and birds, including 27 which are listed under the Endangered Species Act. Management actions thus far have led to stable or increasing populations of most forest bird species, documented in annual forest bird surveys. Hakalau is one of the few places in Hawaii where native forest bird populations are increasing. This is the result of improvements in forest habitats and expansion of native and endangered plant species. Proliferation of alien plant species, such as English holly, can have detrimental effects on restoration efforts as these plants out-compete beneficial native species. Endangered plant and animal species, as well as other native Hawaiian species, depended on a healthy, native forest. Removal of English holly, in conjunction with on-going management of other invasive plant and animal species will help ensure the gains made thus far are not lost.

**Comment [BF3]:** I admit, I'm still wishing for more specifics on the direct impacts of English holly on native plants and birds.

**Sustainability (10 points):** We expect that with this proposed phase of control, English holly will be essentially eradicated from areas where it is most concentrated. However, some viable seeds are likely to remain as well as a few plants outside of refuge boundaries. Through annual monitoring and other activities on the refuge, we would identify areas of resurgence. With the population greatly reduced, control would be feasible with refuge staff, volunteers and contractors. We typically have several volunteer groups each year that are looking to support the refuge doing just this type of work. We will continue to use equipment purchased with previous grant funds to support volunteer invasive species control efforts.

**Comment [BF4]:** Perfect. This is as much as anyone can reasonably ask for.

**Monitoring to document and evaluate project success (10 points):** The current distribution of holly has been determined and mapped using data from annual weed surveys and more intensive surveys targeting holly. Contractors will track treatment areas using a GPS to ensure 100% coverage. Post-treatment monitoring will be achieved through the annual weed surveys, more intensive surveys focusing on the relatively small area where holly occurred prior to treatment and established photo points.

**Budget:**

| Budget item | ISCP funds | USFWS match |
|---|---|---|
| Contract for alien plant control (600 hours @ $60/hr) | $36,000 | Staff time for oversight and post-treatment monitoring<br><br>Housing for contractors |
| Herbicide (Garlon 4 - 20 gal@ $72.00/gal) | $440 | |
| Surfactant (Crop Oil -5 gal @$18.00/gal) | $90 | |
| Dye marker (Turf Trax 20 gal @ $39.00/gal) | $780 | |
| **TOTAL:** | **$37,310** | |

Matching support will be achieved by several means: We have requested funds from the U.S. Forest Service for invasive plant species control in FY15 (they have provided funding since 2001). Multiple partners will provide personnel to assist with monitoring surveys, including USGS, local watershed partnerships, USFWS Invasive Species Strike Team and State of Hawaii resource management agencies. A portion of a 3 year SSP grant is also being used to support the weed monitoring efforts. We anticipate 3-4 volunteer expeditions for invasive plant control, including holly, coming to the refuge in FY15.